UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

Exemption No. 5288

In the matter of the petition of **Air Transport Association of America** for an exemption from §§ 121.314 and 135.169(d) of the Federal Aviation Regulations	**Regulatory Docket No. 26400**

PARTIAL GRANT OF EXEMPTION

By letters dated November 20, 1990, and February 7, 1991, Mr. Joseph D. Vreeman, Vice President, Engineering and Maintenance, Air Transport Association of America, petitioned for exemption from §§ 121.314 and 135.169(d) of the Federal Aviation Regulations (FAR) to permit up to a 36 month extension in the compliance time for the retrofit of Class C and D cargo compartment liners. The petition is on behalf of all affected operators.

This request is for certain large transport airplanes for which the late arrival of service bulletins and extensiveness of the modification will make timely compliance impracticable. In addition, relief is requested for all affected airplanes with respect to repairs.

Section of the FAR affected:

> Section 121.314, as amended by Amendment 121-202, and § 135.169(d) as amended by Amendment 135-31, require, in part, that after March 20, 1991, all Class C and D cargo compartments greater than 200 cubic feet in volume, used on airplanes in air carrier, air taxi and commercial service, have liners constructed of fiberglass or material satisfying the test requirements of § 25.855, as amended by Amendment 25-60, or, in the case of liners approved prior to March 20, 1989, aluminum.

ANM-91-013-E

Related Section of the FAR:

Section 25.855(a-1)(1), as amended by Amendment 25-60, incorporates a new flame penetration test using an oil burner. This test is required of liner materials in Class C and D cargo compartments on affected airplanes, regardless of whether or not the material is fiberglass. These test standards are contained in Appendix F, Part III of Part 25.

The petitioner's supportive information is as follows:

In their original petition, ATA summarized the scope of the compliance problem and requested a blanket eighteen month extension for compliance. The basis for this request was an absence of service information from the airframe manufacturers concerning both the technical details of how to accomplish needed modifications as well as defining the components where modifications were needed. The ATA states that manufacturers were led to believe in Notice of Proposed Rulemaking (NPRM) No. 87-11 that only the large panels comprising the ceiling and sidewall liners would require replacement. For this reason, there was not an active redesign effort made in the period between NPRM and final rule. The petitioner also notes that a request for guidance from The Boeing Company, concerning detail parts, was not answered by the FAA for several months which further delayed the development of modifications.

Subsequent to their initial petition the ATA submitted additional information in a letter dated February 13, 1991. This additional information was broken down by airplane model both in terms of time extension requested, and the parts for which an extension is considered necessary. In this additional information, the estimated cost of compliance is given where available, and the current status of the fleet as well as production airplanes is also noted. This information shows that the airframe manufacturers have not provided service instructions to the operators in a schedule compatible with the compliance time. This information also shows that airlines have made a good faith effort to comply with the regulation, given the limits on their design capability and the uncertainty of which parts would require replacement. Some of the delay in producing parts for kits was caused by the difficulty in changing materials and designing new parts from those materials; the original part design was optimized based on the material used and therefore some tooling and geometry changes were necessary in some cases to accommodate new materials. This type of change was not expected to be required and consequently, the time for redesign was extended beyond original estimates. The ATA submits the following table of requested relief:

Summary of Extension Requests by Aircraft Type

MODEL	PRIMARY AFFECTED COMPONENTS	REPAIRS	REPLACE LINER	REPLACE DESIGN DETAILS
727	door liner details	18	18	36
737	door liner, details	"	9	9
747	bulkhead liner, details	"	15	36
757	bulkhead liner, details	"	9	36
767	sloping side-wall, details	"	--	36
DC10	design details	"	--	24
A300	design details	"	18	36
A310	design details	"	12	24
L1011	decompression	"	8	8
BAe-14		"	?	?
F28/ F100	The F28/F100 are covered by a separate petition			

TABLE 1

The ATA has shown that the overall condition of the fleet is close to total compliance with the regulation. The most extreme case of non-compliance occurs on certain Boeing model airplanes, where only 5 percent of the total liner area is not in compliance. In most other cases, the non-compliant areas make up considerably less than 5 percent of the total, and are confined to specific detail parts. Some of larger areas that require modification are on the cargo doors of various models. Since the door is isolated from the remainder of the compartment by the door frame, airflow through the compartment would not be compromised by any damage that might occur to the door as a result of a fire.

An overriding consideration in the ATA petition is the fragile economic condition of the airline industry and the need to combine work requirements into scheduled maintenance visits whenever feasible. The ATA has submitted individual statements from several airlines illustrating the status of their fleets, and the efforts being made at achieving compliance. This information shows that the cost of compliance for a given airline, for a particular model fleet, can be several hundred thousand dollars. When taken over the total air carrier fleet, the costs of just the materials and labor significantly exceed the cost estimates in the regulation, even without taking account of weight penalty's associated with the modification.

Another issue is repairs. During an industry meeting, operators agreed to pursue development of a high temperature adhesive patch in lieu of using mechanically fastened patches that require blind drilling and riveting into the liner material. The operators consider that it is manifestly preferable from a safety standpoint to await the development of the adhesive product line rather than attempt to meet the compliance deadline for the rule with a potentially dangerous repair system. The potential problem lies in drilling blind holes through the liner material where there are components such as oxygen and hydraulic lines. Damage to these components is a more significant hazard than that posed by the possibility of the repair being exposed to a cargo compartment fire. Adhesive patches should also prove to be more economical. As the new adhesive patches are being certified, they are being ordered and installed by operators. However, the process of developing a full range of patch sizes and the time required to install them throughout the fleet will require an 18 month extension. In particular, the longest lead times and the most difficult repairs entail the covering or replacement of earlier repairs on thinwall liners. Vendors remain highly optimistic of early success.

The ATA submits that this petition is in the public interest. Denial of the requested relief would not result in the production or installation of parts any more quickly and would inevitably result in the unscheduled removal of aircraft from service for unnecessarily costly and potentially dangerous repairs. The resulting disruptions in the deployment of operator fleets and service to the public would have significant economic consequences. The original intent of the basic rule, to require the replacement of sidewall and ceiling liner panels, is substantially complete. As noted in submittals from international operators, certain international regulatory authorities are granting extended compliance times for the equivalent of this rule. An extension reflects the realities of the design process for affected components, and allows a reasonable implementation schedule while rapidly accomplishing the original intent of the rule.

A summary of the petitioner's November 20, 1990, request for exemption was published in the Federal Register on February 11, 1991 (56 FR 5447). One comment was received from an operator who requested that the petition be granted, and who requested the same relief as that granted the ATA.

The Federal Aviation Administration's analysis/summary is as follows:

The petitioner's request is limited to an extension of the compliance time, as opposed to permanent relief from the modifications required. The compliance time established in the regulation was based on a reasonable estimate of the time required to accomplish the necessary design changes and modifications, taking into account the relative urgency and scope of the needed upgrade. As such, the compliance time may be subject to adjustment under certain conditions, where the assumptions made to establish the compliance time are no longer valid.

In this case, the petitioner initially requested fleet-wide relief from

the compliance deadline. The petitioner's request was subsequently amended to specify a schedule of relief, based on airplane model. The FAA concurs that this is the best way to process the petition. The requested relief is based on different aspects of the problem, relating to the specific design ramifications of compliance. The amount of relief requested is intended to correspond to the type of modification required, i.e., design details vs. large panel, and its relative impact on the overall safety of the airplane. In addition to this, there is an airplane model-dependent component to the request. Other factors that affect ability of a carrier to comply include fleet size, which further complicates the issue. Depending on the original design of the cargo compartment, the extent of the modifications required for compliance differs markedly with airplane model. Some airplanes require relatively little modification, while on others the modifications required are extensive. In some instances, the necessity for modifications affecting design details has not yet even been established by the manufacturer. The petition contains data to this effect.

The petitioner proposes that operators will accomplish all required modifications on affected airplanes; however, the petitioner has proposed a time considerably longer than was envisioned by the regulations. The purpose of the retrofit requirements of § 121.314 is to upgrade the overall cargo compartment safety on airplanes in service, in a timely manner. The two year compliance time chosen in the regulation was considered adequate to allow for the majority of installations to be modified and commensurate with the potential hazard. The petitioner notes that operators have made a good faith effort to comply with the requirements in the allotted time; however, due to the late availability of service information from the airframe manufacturers, the uncertainty over the components that require modification, and the extent of the labor required to accomplish the modifications, they will not be able to initiate the required maintenance schedule in time to comply without causing out-of-sequence maintenance. In some cases, compliance by the required date could not be achieved and airplanes would then be grounded.

The cost estimates used in developing the regulation were based on the assumption that retrofit could be accomplished during normal maintenance and that aircraft would not have to be taken out of service to accomplish the necessary modifications.

While the FAA agrees that an extension of the compliance time is warranted, the extension requested by the petitioner is considered to be longer than that needed to accomplish the needed modifications, for many of the airplanes involved. Since all of the airplanes will be modified to comply with § 121.314, the net effect on safety of a relatively short extension is negligible. While the extension of the compliance time is longer for some airplanes and some components, these comprise a relatively small portion of the total cargo compartment liner for those airplanes and limited time extension for replacement or modification is also considered to be insignificant from a safety standpoint. The supporting data submitted with the petition indicates that most of the

operators plan to accomplish modifications during relatively long maintenance visits, for example, "C" checks. Since some of the modifications can be accomplished during a much shorter maintenance visit, and since these occur more frequently, the FAA has determined that an overall reduction in the requested extension is appropriate. In addition, the initial estimates for parts availability are based primarily on supplies from the airplane manufacturer. The FAA expects that, in many cases, once the modifications are specified in sufficient detail, operators will be able to independently fabricate or procure parts at a more expedited rate.

The FAA has carefully reviewed the data provided by the petitioner and has concluded that due to a variety of factors, including some potentially confusing information in the preamble to the regulation itself, a partial grant of exemption is warranted. However, as noted above, the relief granted should be based upon the impact of compliance for each affected model, and an aggressive modification program. Therefore, the FAA has determined that the following schedule of relief is appropriate:

Model	Extension (months)	
	Basic Liner Material	Details **
Boeing 727	12	24
Boeing 737	9	9
Boeing 747	12	24
Boeing 757	9	24*
Boeing 767	none	24
Douglas DC10	none	18
Airbus A300	12	24
Airbus A310	12	24
Lockheed L1011	8	8

***** The aft zippered liner panel on the Boeing Model 757 is given a 36 month extension, based on the unavailability of parts.

****** "Details" refers to any design feature, such as fasteners, lighting lenses, ducting, etc., the failure of which would affect the capability of the liners to safely contain a fire.

TABLE 2

No time extension is granted for replacement of liners and details of British Aerospace, BAe-146, airplanes since the petitioner supplied no supportive information concerning those airplanes.

Another aspect of the petition is the status of repairs in existing

cargo liners. As noted by the petitioner, repairs which comply with the requirements of § 121.314 have only recently been developed. Since virtually every cargo compartment liner in service has some amount of damage which has been repaired, it has not been possible for the existing repairs to be replaced with complying repairs until now. Repairs were not given detailed examination during the development of the regulation since the FAA was not aware of the extent of the technological problem. Prior to the petition being filed, the FAA became aware that the only existing approved repair that complied with the oil burner test specified involved the use of mechanical fasteners. This repair method, while secure, has the potential to result in damage behind the liner to critical components such as oxygen and fuel lines. The FAA considers that this method of making a temporary repair may not be in the interests of safety. Mechanical fastening may be more appropriate for permanent repairs, where the liner panel can be removed from the airplane. There may also be alternate mechanical fastening methods that are less prone to inadvertent damage; the FAA has received input from a tool manufacturer indicating that such methods exist and are suitable for field use. In any event, this information too has only recently become available and the issue of timely compliance is still valid.

The primary compliance problem with the existing repairs is the performance of the repair when subjected directly to the burner flame. The primary function of the repair is to provide an air barrier and inhibit any increased ventilation through the compartment due to the damage. Over the long term, it must be assumed that a fire could impinge directly on the repair, and therefore the repair should provide the same level of protection as the basic liner panel. Over a shorter period, however, the FAA considers that a reasonable amount of time is warranted to implement the recently developed repair method into the fleet. The repair issue is not model dependent, and therefore a fleet wide extension is warranted irrespective of model. The FAA proposes to allow an additional one year to upgrade existing repairs. This will allow implementation at "C" check intervals for most airplanes, although it should be possible to make some of the upgrades on the ramp. New repairs will be required to comply within six months of the compliance date.

In consideration of the foregoing, I find that a partial grant of exemption is in the public interest and will not affect the level of safety provided by the regulations. Therefore, pursuant to the authority contained in §§ 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), an exemption is hereby granted to permit operation, under the provisions of Parts 121 and 135 of the FAR with airplanes that do not comply with the provisions of §§ 121.314 and 135.169(d) of that part. The following limitations apply to this exemption:

1. Extension of the compliance deadline for basic liner materials and details is limited to the types of airplanes and number of months as listed in Table 2 of this exemption, with the exception of the aft bulkhead liner zippered panel on the Boeing Model 757

airplane. This part is exempted from the requirements of § 121.314 until March 20, 1994.

2. Repairs of the cargo liners of transport category airplanes must comply fully with the provisions of § 121.314 no later than March 20, 1992; repairs made after September 20, 1991, must comply with § 121.314 as adopted by Amendment 121.202.

Issued in Renton Washington, on March 18, 1991.

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April 30, 2003